

fell to 12°. Giddings, 19th: the thermometer, at 4 a. m., stood at 15°. The heaviest freeze for many years is expected. Hillsboro, 19th: the weather is intensely cold and a fine mist of snow has been falling all day. Marshall 20th: last night and to-day were the coldest of the season, the temperature being 18° at sunrise. McKinney, 19th: extremely cold weather; mercury 10° above zero. San Saba, 19th: the thermometer recorded 12°, on this date, being the lowest for the winter. The weather is very severe on cattle and sheep.

Utah.—Salt Lake City, 20th: the temperature in this city reached 20° below zero this morning. Temperatures as low as 40° below zero are reported from neighboring places in Utah.

Washington Territory.—Bainbridge Island, 19th: coldest day of the past five years; minimum temperature 12°.

Wisconsin.—Embarrass: at 5 a. m. of the 21st, the mercury froze at -40° and remained frozen until 8.30 a. m.

FROSTS.

In the various districts they were reported on the following dates:—

New England.—1st to 31st.

Middle Atlantic states.—1st to 5th, 8th to 13th, 15th to 20th, 22d to 27th, 29th, 30th, 31st.

South Atlantic states.—1st, 2d, 3d, 5th, 9th to 17th, 22d to 25th, 27th, 28th, 30th.

Eastern Gulf.—1st, 2d, 9th to 12th, 14th, 15th, 21st to 34th, 29th, 30th.

Western Gulf.—1st, 2d, 4th, 6th to 12th, 14th, 18th to 25th, 28th to 31st.

Rio Grande valley.—7th to 11th, 14th, 20th to 23d, 29th, 30th, 31st.

Ohio valley and Tennessee.—1st to 16th, 18th to 31st.

Lower lakes.—1st to 31st.

Upper lakes.—1st to 31st.

Extreme northwest.—1st to 31st.

Upper Mississippi valley.—1st to 31st.

Missouri valley.—1st to 31st.

Northern slope.—1st to 10th, 12th to 31st.

Middle slope.—1st to 5th, 7th 8th, 10th, 11th, 14th, 15th, 17th, 18th, 21st, 24th, 25th, 26th, 28th, 29th, 31st.

Southern slope.—1st to 4th, 6th to 11th, 13th, 14th, 18th to 25th, 28th, 29th.

Southern plateau.—1st to 31st.

Middle plateau.—1st, 2d, 3d, 5th, 6th, 8th to 13th, 15th, 16th, 18th, 19th, 20th, 22d, 23d, 27th.

California.—2d to 24th, 26th, 27th, 28th.

The occurrence of frosts has also been reported by the following stations, not included in the districts named above: Cedar Keys, Florida, 12th, 24th; Umatilla, Oregon, 10th, 11th, 12th; Roseburg, Oregon, 1st, 2d, 4th, 7th to 11th, 18th to 23d; Olympia, Washington Territory, 1st, 2d, 12th, 13th, 17th; San Diego, California, 7th, 20th.

ICE.

The subject of the formation of ice in the northern sections, is considered elsewhere in the REVIEW under the heading "ice in rivers and harbors." The following are exceptional cases of ice formation in the southern sections of the country:—

Alabama.—Auburn, 11th.

Arizona.—Tucson, 9th; Yuma, 20th, 21st.

California.—Los Angeles, 20th; Visalia, 12th.

Florida.—Jacksonville, 10th, 12th, 13th, 14th; Pensacola, 10th, 23d; Saint Augustine, 10th, 12th.

Georgia.—Augusta, 12th; Quitman, 10th, 12th, 24th.

Louisiana.—New Orleans, 9th.

Mississippi.—Fayette, 22d, 23d.

North Carolina.—Fort Macon, 10th, 12th.

South Carolina.—Stateburg, 11th, 13th.

Texas.—Brownsville, first ice, 9th; Eagle Pass, 1st, 9th, 14th, 19th, 20th to 23d; Fort Concho, 1st, 8th, 13th; Fredericksburg, 20th; Galveston, 9th, 20th, 21st; Indianola, 2d, 9th, 20th; Palestine, 20th.

PRECIPITATION.

[Expressed in inches.]

The distribution of rainfall over the United States and Canada, as determined from observations taken at more than five hundred stations, is exhibited on chart iv. Owing to lack of reports from certain sections, the lines upon the chart indicating the amount of precipitation have not been completed; viz.: from northeastern New York eastward over northern Maine; in northern Wisconsin and northwestern Michigan; from southern Idaho and northern Nevada to central Oregon.

There has been an excess over the average January rainfall in all the districts bordering on the Atlantic and Gulf coasts, except in southern Texas. The excesses are very large in the south Atlantic and east Gulf states, being 4.00 and 5.31 respectively. In the other districts named, the departures vary from 0.29 in New England, to 0.73 in the west Gulf states. In Tennessee, the upper lake region, the extreme northwest, Missouri valley and northern plateau, the rainfall is also above the January average. In those districts the excesses are small, varying from 0.03 to 0.31, except in the northern plateau where the departure is 1.07. An area of deficiency embraces the lower lakes, the upper Mississippi and Ohio valleys, and the whole of the country lying west of the one-hundredth meridian, except in the extreme northwest and northern plateau. A marked deficiency occurs on the Pacific coast, especially in the middle Pacific, where it amounts to 4.14. In the other districts embraced in the area of deficiency, the departures vary from 0.03 in the northern slope, to 1.11 in the Rio Grande valley.

In the first column of the following table is given the average January precipitation in the various districts for several years; in the second column is given the average for January, 1883; and the third column shows the excess or deficiency of January, 1883, as compared with the average of previous years.

Average precipitation for January, 1883.

Districts.	Average for January. Signal Service observations.		Comparison of Jan., 1883, with the average for several years.
	For several years.	For 1883.	
	Inches.	Inches.	Inches.
New England.....	3.68	3.97	0.29 excess.
Middle Atlantic states.....	3.73	4.22	0.49 excess.
South Atlantic states.....	4.19	8.19	4.00 excess.
Florida peninsula.....	3.60	5.63	0.63 excess.
Eastern Gulf.....	4.98	10.29	5.31 excess.
Western Gulf.....	2.84	3.55	0.73 excess.
Rio Grande valley.....	1.52	0.41	1.11 deficiency.
Tennessee.....	6.32	6.45	0.13 excess.
Ohio valley.....	3.59	3.17	0.42 deficiency.
Lower lakes.....	2.52	1.84	0.68 deficiency.
Upper lakes.....	1.69	1.72	0.03 excess.
Extreme northwest.....	0.57	0.88	0.31 excess.
Upper Mississippi valley.....	1.59	1.31	0.28 deficiency.
Missouri valley.....	0.74	0.80	0.06 excess.
Northern slope.....	0.66	0.63	0.03 deficiency.
Southern slope.....	0.80	0.68	0.72 deficiency.
Northern plateau.....	1.25	2.32	1.07 excess.
Middle plateau.....	0.94	0.83	0.11 deficiency.
Southern plateau.....	0.81	0.76	0.05 deficiency.
North Pacific.....	8.19	7.46	0.73 deficiency.
Middle Pacific.....	5.81	1.67	4.14 deficiency.
South Pacific.....	2.31	0.93	1.38 deficiency.
Mt. Washington, N. H.....	4.29	4.16	0.13 deficiency.
Pike's Peak, Colo.....	1.89	0.54	1.35 deficiency.
Fort Elliott, Tex.....	0.27	trace.	0.27 deficiency.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The departures exhibited by the reports from the regular Signal Service stations are shown in the above table of average precipitation. The Chief Signal Officer is indebted to voluntary observers for the following interesting items bearing upon this subject. These comparisons are of special importance, as many of the records from which they are made cover long periods, some extending back many years before the establishment of the Signal Service.

Illinois.—Anna: monthly precipitation, 2.25, or 1.73 below the January average of the last eight years. The largest monthly precipitation for January during that period, 13.25, was that of 1876; the smallest, 0.91, was that of 1875. **Riley:** monthly precipitation, 2.18, is 0.35 above the January average

Table of Excessive, Greatest and Least Monthly Rainfalls.

STATION.	SPECIALLY HEAVY.			Largest Monthly Amount.	SMALLEST MONTHLY.		
	Date.	Amt.	Duration		STATION.	Amt.	
<i>Alabama.</i>							
Green Springs.....				10.47		<i>Arizona.</i>	
Mount Vernon Barracks	17, 18, 19	5.30		10.30		Texas Hill.....	
Mobile.....	17, 18	2.65		8.80		Fort Verde.....	
Auburn.....				8.79		Prescott.....	
Montgomery.....	18, 19	1.93		7.20		San Simon.....	
<i>Arkansas.</i>							
Little Rock.....	3, 4	2.08				<i>California.</i>	
<i>California.</i>							
Fort Bidwell.....	31	2.04				Delano.....	
Red Bluff.....	1	1.90				Fresno.....	
<i>Florida.</i>							
Pensacola.....	16, 17, 18	5.46		9.97		Goshen.....	
Fort Barrancas.....	17	2.50		7.45		Kingsburg.....	
Cedar Keys.....	9	2.10				Maximo Tank.....	
<i>Georgia.</i>							
Atlanta.....	19, 20, 21	6.53				Mojave.....	
Do.....	4, 5, 6	6.18				Sumner.....	
Quitman.....	8, 9	3.30		11.50		Caliente.....	
Do.....	18, 19	2.10				Ysalia.....	
Do.....	26, 27	2.10				Tehachapi.....	
Forsyth.....				10.08		White Water.....	
Savannah.....	18	3.48		7.34		Keene.....	
Augusta.....	19, 20	2.04		7.00		Ravenna.....	
<i>Louisiana.</i>							
Point Pleasant.....	19, 20	4.17		13.12		Colton.....	
Do.....	5, 6	3.25				Spadra.....	
Do.....	15, 16	3.11				Willows.....	
New Orleans.....	19	3.71		10.63		<i>Colorado.</i>	
Do.....	28	2.10				West Las Animas.....	
Port Eads.....	18, 19	2.95		8.83		Colorado Springs.....	
Do.....	16, 17	2.48				<i>Dakota.</i>	
<i>Mississippi.</i>							
Fayette.....	5, 6	7.20		12.40		Fort Meade.....	
Do.....	13	2.20				Fort Sisseton.....	
Starkville.....	4	2.09		9.85		Fort Snely.....	
<i>New Jersey.</i>							
Vineland.....				0.13		Rapid City.....	
<i>North Carolina.</i>							
Sloop Point.....	15, 16, 17	4.25		14.18		Pembina.....	
Hatteras.....	19, 20	3.08		13.90		Smithville.....	
Do.....	8, 9	2.62				Bismarck.....	
Do.....	28, 29	2.60				Fort Yates.....	
Portsmouth.....	8, 9	3.10		11.43		Alexandria.....	
Do.....	18, 19	2.88				Fort Bennett.....	
Murphy.....				10.60		Fort Stevenson.....	
Highlands.....	19, 20	2.50		9.90		<i>Indian Territory.</i>	
Charlotte.....	19, 20	2.95		8.87		Fort Supply.....	
Fort Macon.....	9, 10	2.45		8.85		Fort Still.....	
Do.....	18, 19	2.11				<i>Kansas.</i>	
Wilmington.....	8, 9	2.53		6.33		Salina.....	
Kittyhawk.....	9, 10	2.20				Creswell.....	
Smithville.....	8, 9	1.99				South Haven.....	
<i>Oregon.</i>							
Portland.....	5, 6	7.23		13.71		Manhattan.....	
Do.....	28, 29	2.18				Pretty Prairie.....	
Eola.....				7.37		Levy.....	
Fort Stevens.....	5, 6	2.40				Oxford.....	
<i>Pennsylvania.</i>							
Wellsborough.....				7.12		Bella Plain.....	
<i>South Carolina.</i>							
Aiken.....				6.96		Wellington.....	
<i>Tennessee.</i>							
Chattanooga.....				9.31		Argyle.....	
Knoxville.....	20	2.54		7.94		Clay Centre.....	
<i>Texas.</i>							
New Ulm.....				7.72		Milan.....	
Galveston.....	5, 6	3.61		6.46		Fort Leavenworth.....	
<i>Virginia.</i>							
Norfolk.....				6.91		Rolling Green.....	
Washington Territory.						Topeka.....	
Fort Canby.....	5, 6	2.44		9.38		<i>Minnesota.</i>	
<i>Utah.</i>							
						Saint Vincent.....	
						<i>Missouri.</i>	
						Greenfield.....	
						Phelps City.....	
						<i>Montana.</i>	
						Glendive.....	
						Fort Keogh.....	
						Fort Custer.....	
						Terry's Landing.....	
						<i>Nebraska.</i>	
						Nebraska City.....	
						<i>Nebraska City.</i>	
						Humboldt.....	
						Elko.....	
						Brown's.....	
						Goleconda.....	
						Hot Springs.....	
						Pioche.....	
						Tecoma.....	
						Wadsworth.....	
						Toano.....	
						<i>New Mexico.</i>	
						Deming.....	
						Lordsburg.....	
						Santa Fe.....	
						<i>New York.</i>	
						Hector.....	
						<i>Rhode Island.</i>	
						Fort Adams.....	
						<i>Texas.</i>	
						Fort Stockton.....	
						Fort Elliott.....	
						Eagle Pass.....	
						Fort Davis.....	
						Fort McKavett.....	
						Coleman City.....	
						El Paso.....	
						Brackettville.....	
						Concho.....	
						Uvalde.....	
						San Antonio.....	
						<i>Utah.</i>	
						Kelton.....	
						Promontory.....	
						<i>Wyoming.</i>	
						Fort Bridger.....	

of the last twenty-two years. Swanwick: monthly precipitation, 1.41, is about 2.40 below the January average.

Indiana.—Logansport: monthly precipitation, 1.75, is 0.34 below the January average of the last twenty-four years. The monthly snowfall, 15.35 inches is 5.03 above the January average. The only years in which a greater depth of snow fell during January are: 1862, 24.00 inches; 1867, 23.00; 1873, 35.36. Vevay: monthly precipitation, 3.31, is 0.76 below the January average of the last eight years. The depth of snowfall during the month, 2.95 inches, or 6.39 below the January average.

Iowa.—Clinton, monthly precipitation, 1.25 or 0.28 the January average.

Kansas.—Lawrence, monthly precipitation, 0.73, or 0.49 below the January average of the last sixteen years. The smallest January precipitations of that period were 0.17 and 0.12, which fell in 1872 and 1875 respectively; the largest, 3.05, fell in 1878. The depth of snowfall for the month was 5.50 inches or 1.58 below the January average. Yates Centre, monthly precipitation 0.55, or 0.49 below the January average of the last three years. Wellington, monthly precipitation, 0.37, or 0.34 below the January average of the last four years.

Maine.—Gardiner, monthly precipitation, 2.50, or 0.74 below the January average of the last forty-seven years.

Maryland.—Fallston, monthly precipitation, 4.27, or 0.70 above the January average of the last thirteen years. The greatest January precipitation of that period, 6.63, was that of 1882; the least, 1.20, was that of 1872.

New Hampshire.—Antrim, monthly precipitation, 2.85, or 0.83 below the January average of the last ten years. Snow fell to a depth of 13.50 inches, which is 6.88 less than the average for January. Grafton, monthly precipitation, 2.14, or 1.13 below the average of the last fourteen years. Contoocookville, monthly precipitation, 2.12, is slightly below the January average of the last twelve years. Snow fell to a depth of 17.00 inches, which is slightly above the January average.

New York.—Palermo: Monthly precipitation, 2.95, or 0.15 below the January average of the last thirty years. The largest January precipitation of that period was 4.70, in 1867; the smallest was 1.50, in 1866 and 1869. Snow fell to a depth of 33.00 inches which is 11.00 more than the January average. The largest January snowfall, 47.00 inches, fell in 1867; the smallest, 2.00 inches, fell in 1882. North Volney: Monthly precipitation, 2.35, or 0.77 below the January average of the last eleven years. During that period the largest January precipitation, 5.95, was that of 1874; the smallest, 2.30, was that of 1880.

Vermont.—Woodstock: Monthly precipitation, 2.41, or 0.61 below the January average of the last fourteen years. During that period the largest January precipitation, 6.21, was that of 1870; the smallest, 1.55, was that of 1872. During the last twenty-two years, the largest monthly snowfall was 37.7 inches, which fell in 1875; the smallest, 14.0, inches, fell in 1866; monthly snowfall for January 1883 is 22.4 inches.

Virginia.—Wytheville: Monthly precipitation, 4.04, or 0.51 above the January average. Variety Mills: Monthly precipitation, 3.97, or 0.12 below the January average of the last four years.

The following table showing the monthly and annual rainfalls with the monthly and annual averages, and the rainfall by seasons with the numbers of rainy days at Sacramento, California, from January, 1853 to December, 1882, have been compiled by Sergeant James A. Barwick, Signal Corps, U. S. A. The data used in their preparation from January, 1853, to December, 1874, are from a record kept by Dr. F. M. Logan, and were furnished by Mr. E. P. Smith, Secretary of the State Agricultural Society. The data used from January, 1875, to July, 1877, were obtained from Dr. F. W. Hatch, Secretary of the State Board of Health, and from Mr. S. H. Gerrish, a local observer of Sacramento; and from July, 1877, to December, 1882, the records of the Signal Service have been used.

The precipitation for January, 1883, (Signal Service) is 2.23, or 1.79 below the average of January, for the twenty-nine preceding years.

Monthly and annual rainfalls with monthly and annual averages at Sacramento, California.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual sums.	Monthly average.
1853	3.00	2.00	7.00	3.50	1.45	—	—	0.00	—	—	1.30	13.41	31.86	2.66
1854	3.25	8.50	3.25	1.50	0.21	0.31	0.00	—	—	1.01	0.65	1.54	20.22	1.68
1855	2.67	3.46	4.20	4.32	1.15	0.01	0.00	—	—	0.00	0.76	1.15	17.72	1.48
1856	4.92	0.69	1.41	2.13	1.84	0.03	0.00	—	—	0.20	0.65	2.00	13.87	1.16
1857	1.38	4.80	0.68	—	—	0.35	0.00	—	0.00	0.66	2.41	2.40	12.68	1.06
1858	2.45	2.46	2.88	1.21	0.20	0.10	0.01	—	—	3.01	0.15	2.63	15.10	1.26
1859	0.96	3.91	1.64	0.98	1.04	0.00	0.03	0.00	0.02	0.00	6.49	4.34	19.41	1.62
1860	2.31	0.93	5.11	2.88	2.49	0.02	0.00	0.00	0.06	0.92	0.18	1.84	16.74	1.39
1861	2.67	2.92	3.32	0.48	0.69	0.13	0.55	0.00	0.00	—	2.17	4.28	17.11	1.43
1862	15.04	4.26	2.80	0.82	1.81	0.01	0.01	0.00	0.00	0.36	—	8.64	33.75	2.81
1863	1.73	2.75	2.36	1.69	0.36	0.00	—	—	—	0.00	1.49	2.33	12.71	1.06
1864	1.08	0.19	1.30	1.08	0.74	0.09	0.00	0.08	—	0.12	6.72	1.81	13.21	1.10
1865	4.78	0.71	0.48	1.37	0.46	0.00	0.01	0.00	0.08	0.48	2.43	7.87	18.67	1.56
1866	7.70	2.01	2.02	0.48	2.25	0.10	0.02	0.00	—	—	2.43	0.36	17.37	1.45
1867	3.44	7.10	1.01	1.80	0.01	—	—	—	0.01	—	3.81	9.51	26.69	2.22
1868	6.04	3.15	4.35	2.31	0.27	—	0.00	0.00	0.00	—	0.77	12.85	29.74	2.48
1869	4.79	3.63	2.94	1.24	0.65	0.01	0.00	0.00	—	2.12	0.85	2.61	18.84	1.57
1870	1.37	3.24	1.64	2.12	0.27	—	—	—	0.00	0.02	0.58	1.95	11.20	0.93
1871	2.08	1.92	0.69	1.45	0.70	—	0.00	0.00	—	0.21	1.22	0.97	9.30	0.78
1872	4.04	4.74	1.94	0.61	0.28	0.02	0.00	—	—	0.22	1.93	10.59	24.37	2.03
1873	1.23	4.36	0.55	0.51	0.00	—	0.02	—	0.00	0.31	1.21	5.39	13.58	1.13
1874	5.20	1.86	3.95	0.89	0.37	—	—	0.00	0.05	2.25	3.80	10.01	27.49	2.29
1875	8.71	6.55	0.80	—	—	1.10	0.00	0.00	0.00	0.44	6.20	0.44	24.24	2.02
1876	4.99	3.75	4.15	1.10	0.15	0.00	0.21	0.02	0.00	3.45	0.30	5.52	23.64	1.97
1877	2.77	1.04	0.56	0.19	0.64	0.01	—	—	0.00	0.73	1.07	0.00	7.01	0.58
1878	9.26	8.04	3.09	1.07	0.17	0.00	0.00	0.00	0.29	0.55	0.51	1.43	24.41	2.03
1879	3.18	3.88	4.88	2.66	1.30	0.13	—	—	0.00	0.88	2.05	0.47	19.43	1.62
1880	1.64	1.83	1.70	14.20	0.76	0.00	—	0.00	0.00	0.00	0.05	3.41	23.59	1.97
1881	6.14	5.06	1.37	1.64	—	0.56	—	0.00	0.30	0.55	1.88	11.51	29.25	2.44
1882	1.89	2.40	3.78	1.99	0.35	0.10	—	0.00	0.57	2.63	3.22	3.27	20.20	1.68
Sums.....	120.71	102.15	74.94	56.24	20.58	3.03	0.87	0.10	1.38	21.12	57.48	134.85	593.40	49.46
Means.....	4.024	3.405	2.498	1.874	0.686	0.101	0.029	0.003	0.046	0.704	1.916	4.495	19.780	1.649

— Inappreciable.

Rainfall by seasons, with number of rainy days, at Sacramento, California.

Year.	Winter.		Spring.		Summer.		Autumn.		Annual sums.	Total No. of days.
	Dec., Jan. & Feb.		Mar., Apr., May.		June, July, Aug.		Sept., Oct., Nov.			
	Amount.	No. of days.	Amount.	No. of days.	Amount.	No. of days.	Amount.	No. of days.		
1853.....	18.41*	38	11.95	19	—†	3	1.50	7	31.86	67
1854.....	13.29	24	4.96	17	0.31	3	1.06	14	20.22	58
1855.....	7.28	30	9.67	24	0.01	1	0.70	10	17.72	65
1856.....	7.61	35	5.38	17	0.03	1	0.85	17	13.87	70
1857.....	8.58	44	0.68	14	0.35	3	3.07	13	12.68	74
1858.....	7.54	47	4.29	20	0.11	7	3.16	21	15.10	95
1859.....	9.21	54	3.66	24	0.03	1	6.51	18	19.41	97
1860.....	5.06	46	10.48	35	0.02	2	1.16	10	16.74	99
1861.....	9.87	39	4.39	14	0.68	7	2.17	13	17.11	73
1862.....	27.94	53	5.43	33	0.02	2	0.30	8	53.75	96
1863.....	6.81	32	4.41	21	—†	3	1.49	8	12.71	64
1864.....	3.08	19	3.12	24	0.17	6	6.84	12	13.21	61
1865.....	13.36	35	2.31	12	0.01	3	2.99	18	18.67	68
1866.....	10.67	38	4.75	22	0.12	5	2.45	10	17.37	75
1867.....	20.05	45	2.82	14	—†	3	3.82	8	26.69	70
1868.....	22.04	44	6.93	23	—†	3	0.77	8	29.74	78
1869.....	11.03	30	4.83	19	0.01	1	2.97	6	18.84	56
1870.....	6.57	27	4.03	14	—†	3	0.60	8	11.20	52
1871.....	4.97	25	2.90	19	—†	1	1.43	10	9.30	55
1872.....	19.37	51	2.83	19	0.02	3	2.15	8	24.37	81
1873.....	10.98	40	1.06	8	0.02	4	1.52	9	13.58	61
1874.....	17.07	44	4.31	26	—†	3	6.11	18	27.49	91
1875.....	15.70	42	0.80	13	1.10	2	6.64	14	24.24	71
1876.....	14.26	37	5.40	27	0.23	3	3.75	8	23.64	75
1877.....	3.81	30	1.39	20	0.01	3	1.80	12	7.01	55
1878.....	18.73	39	4.33	21	0.00	0	1.35	7	24.41	67
1879.....	7.53	23	8.74	31	0.13	3	2.93	12	19.43	69
1880.....	6.88	29	16.66	25	—†	1	0.65	2	23.59	57
1881.....	23.01	42	3.01	13	0.50	3	2.73	11	29.25	70
1882.....	7.56	25	6.12	19	0.10	2	6.42	15	20.20	61
Sums.....	357.69	1,098	151.74	577	3.99	85	79.98	341	593.40	2,131
Means.....	11.92	36.6	5.06	20.2	0.13	2.3	2.67	11.4	19.78	71

* The rainfall of December, 1852, has been used in completing the winter's rainfall opposite 1853; the rainfall of December, 1853, for that opposite 1854, etc. —† Inappreciable.

The following table shows the greatest and least number of rainy (upon which rain fell) and cloudy days, and the percentages of mean relative humidity, as reported from the various districts:

Table of rainy and cloudy days and relative humidity for January, 1883.

Districts.	Rainy days	Cloudy days.	Relative humidity.*
	From 15 to 21	From 3 to 16	Percentages.
New England.....	13 " 24	10 " 18	From 65.0 to 82.8
Middle Atlantic states.....	" 11 " 22	" 6 " 15	" 64.9 " 85.8
South Atlantic states.....	" 10 " 11	" 5 " 10	" 71.3 " 91.3
Florida peninsula.....	" 15 " 19	" 5 " 13	" 81.3 " 83.8
Eastern Gulf.....	" 8 " 16	" 5 " 13	" 71.1 " 78.9
Western Gulf.....	" 3 " 14	" 6 " 10	" 68.0 " 84.3
Rio Grande valley.....	" 11 " 25	" 13 " 21	" 56.2 " 78.2
Ohio valley and Tennessee.....	" 19 " 26	" 12 " 22	" 60.1 " 81.7
Lower lakes.....	" 15 " 27	" 9 " 20	" 67.0 " 86.4
Upper lakes.....	" 10 " 14	" 4 " 5	" 71.0 " 84.0
Extreme northwest.....	" 14 " 20	" 3 " 11	" 79.6 " 94.3
Upper Mississippi valley.....	" 8 " 18	" 5 " 9	" 56.4 " 77.8
Missouri valley.....	" 4 " 15	" 4 " 14	" 53.2 " 75.5
Northern slope.....	" 4 " 9	" 2 " 8	" 43.5 " 85.7
Middle slope.....	" 0 " 9	" 0 " 6	" 50.7 " 83.3
Southern slope.....	" 6 " 12	" 3 " 10	" 28.0 " 67.0
Southern plateau.....	" 7 " 22	" 3 " 19	" 47.4 " 70.6
Middle plateau.....	" 19 " 21	" 16 " 20	" 50.9 " 57.2
Northern plateau.....	" 4 " 12	" 3 " 5	" 75.0 " 83.0
North Pacific.....	" 2 " 5	" 3 " 6	" 79.1 " 84.4
Middle Pacific.....	" 2 " 5	" 3 " 6	" 74.3 " 82.7
South Pacific.....	" 2 " 5	" 3 " 6	" 59.4 " 75.3

* Relative humidity corrected for altitude.

HAIL.

The dates on which hail has been reported are as follows:—

Arizona.—Fort Verde, 19th; Fort Bowie, 14th, 16th, 19th.

Arkansas.—Mount Ida, 20th, 21st.

California.—Cape Mendocino, 28th.

Connecticut.—Bethel, 20th.

Dakota.—Fort Randall, 26th, 28th.

Indiana.—Vevay, 4th, 13th, 29th.

Iowa.—Monticello, 10th; Clinton, 3d, 4th, 16th.

Kansas.—Yates Centre, 3d, 19th; Fort Scott, 12th.

Massachusetts.—Williamstown, 27th.

Missouri.—Protem, 20th.

New Jersey.—Moorestown, 6th, 19th; Bordentown, 13th; Manasquan, 19th.

New Mexico.—Fort Cummings, 19th.

New York.—New York City, 31st.

North Carolina.—Life-saving Station No. 6, 16th; Weldon, 16th; Chapel Hill, 21st.

Ohio.—College Hill, 20th.

Oregon.—Fort Stevens, 11th.

Pennsylvania.—Catawissa, 6th, 7th; Wellsboro, 27th, 28th; West Chester, 13th; Grampian Hills, 17th, 19th.

Texas.—Palestine, 19th; Galveston, 21st; Fort Concho, 2d.

Wisconsin.—Manitowoc, 12th.

It is probable that some of the above reports are incorrect, and should have been recorded as sleet instead of hail.

SNOW.

The dates on which snow is reported to have fallen in the various districts are as follows:—

New England states.—1st to 11th, 13th to 22d, 24th to 31st.

Middle Atlantic states.—1st, 2d, 4th to 14th, 16th, 17th, 19th, 20th, 21st, 23d, 25th to 30th.

South Atlantic states.—9th, 10th, 11th, 14th.

Eastern Gulf.—8th, 9th, 11th.

Western Gulf.—1st, 8th, 12th, 19th, 20th.

Ohio valley.—1st, 2d, 4th, 5th, 6th, 8th to 17th, 20th to 25th, 29th, 30th, 31st.

Tennessee.—1st, 2d, 8th to 11th, 14th, 20th, 21st.

Lower lakes.—1st to 26th, 28th to 31st.

Upper lakes.—1st to 31st.

Extreme northwest.—2d, 4th to 7th, 9th to 13th, 17th, 18th, 19th, 21st to 27th, 29th, 30th, 31st.

Upper Mississippi valley.—1st, 2d, 4th to 13th, 15th to 27th, 29th, 30th, 31st.

Missouri valley.—3d to 10th, 12th to 26th, 28th to 31st.

Northern slope.—1st to 7th, 10th, 12th, 14th to 22d, 24th, 25th, 27th to 31st.

Middle slope.—3d, 4th, 5th, 7th, 14th, 15th, 16th, 18th, 19th, 20th, 26th, 30th, 31st.

Southern slope.—8th, 9th, 19th, 20th.

Southern plateau.—3d, 4th, 5th, 8th, 14th, 15th, 16th, 19th, 20th.

Middle plateau.—1st, 3d, 4th, 14th to 18th, 21st, 24th, 25th, 26th, 29th, 30th.

Northern plateau.—2d, 3d, 4th, 6th, 7th, 12th to 17th, 20th, 21st, 24th, 25th, 27th, 29th, 30th, 31st.

Snow also fell in the following states and territories, not included in the districts named above:—

California.—Fort Bidwell, 3d to 6th, 24th to 27th. San Francisco, 1st, Los Angeles, 2d; snow in mountains during the morning.

Oregon.—Fort Klamath, 3d, 4th, 14th, 15th, 16th, 23d to 26th.

Washington Territory.—Fort Towsend, 4th, 14th, 15th, 19th, 22d.

The following are reports of unusually severe snow-storms, which have occurred during the month:—

Newport, Rhode Island, 10th.—Snow-drifts are from two to ten feet deep; estimated to be about one foot deep on the level; trains on the Old Colony railroad were delayed on account of snow-drifts.

Dubuque, Iowa, 9th.—Very heavy snow-storms; all incoming trains delayed from one to three hours by snow-drifts. 16th, railroad travel still impeded by snow-drifts; also on the 19th, and 20th. On the 30th, no trains arrived from the west; snow blockade on the western division of the Illinois Central railway.

Saint Paul, Minnesota, 10th.—Snow badly drifted, causing delay of trains on all the railroads centring here. 13th and 14th, trains again delayed on account of snow blockades. 19th, railroads obstructed by snow blockades and trains abandoned on the Northern Pacific, the Saint Paul, Minneapolis and Manitoba, and the Sioux City and Saint Paul railroads; all other trains arrive from two to six hours late. 20th, the snow blockades continue on all roads running northwest and south, but trains arrive on time from eastern points. 21st, trains on time from eastern points; trains on the roads running north and south are from two to four hours late. Snow blockades continued on the 22d, 23d, and 24th. 25th, road snow unobstructed; trains arrive and depart on time. 31st, railroads again blockaded by snow-storm of the 30th.

Huron, Dakota, 12th.—Trains are blockaded east of this place by snow-drifts. 13th, very heavy snow-storm in Minnesota, blockading trains. Snow blockades interrupted railroad travel from the 19th to the close of the month.

Billings, Montana, 22d.—Snow is from one to one and a half feet deep on the level, and from ten to thirty feet deep in ravines. Cresco, Iowa, 13th.—Snow badly drifted; railroad travel suspended. The railroads were also obstructed by snow-drifts on the 20th and 31st.

LARGEST MONTHLY SNOWFALLS.

[Expressed in inches.]

The following are the largest monthly snowfalls reported from the various states and territories during the month:—

Arizona.—Fort Apache, 5.25.

California.—Alta, 11; Brentwood, 10; Summit, 10; Cisco, 9; Byron, 8; Lathrop, 8; Antioch, 7; Martinez, 6; Modesto, 6; Tracy, 5; Fort Bidwell, 4.75.

Colorado.—Fort Lyon, 11; Fort Collins, 10; Fort Garland, 9.

Connecticut.—New Haven, 11; Southington, 8.25; New London, about 6.

Dakota.—Fort Lincoln, 11; Yankton, 10.50; Fort Totten, 9.25; Fort Hall, 7; Morrilton, 6; Wicklow, 5.50; Fort Ellis, 3.

District of Columbia.—West Washington, 11.50.

Idaho.—Eagle Rock, 20.75.

Illinois.—Rockford, 19.50; Riley, 18.75; Elmira, 18; Chicago, 16; Springfield, 11; Champaign, 10.75; Charleston, 9.75; Bunker Hill, 6; Mattoon, 6.

Indiana.—Logansport, 16.25; Wabash, 11.50; Lafayette, 10; Greensburg, 9; Monticello, 8.75; Indianapolis, about 8; Fort Wayne, 5.75; Rising Sun, 5.

Iowa.—Des Moines, 23; Logan, 23; Ames, 21; Humboldt, 16.50; Keokuk, 16.50; Dubuque, 16; Muscatine, 16; Indianola, 15.75; Clinton, 14; Independence, 14; Cresco, 13; Cedar Rapids, 10.75; Monticello, 10.75; Davenport, 10.50; Guttenburg, 10.25.

Kansas.—Leavenworth, 7.50; Salina, 7; Lawrence, 5.50; Manhattan, 4.50; Fort Scott, 4.25.

Maine.—Dexter, 21.50; Eastport, 19.50; Cornish, 18; Orono, 15; Gardiner, 14.

Maryland.—Cumberland, 15; Fallston, 15; Sandy Springs, 11.75; Emmittsburg, 11.25; Baltimore, 5.50.

Massachusetts.—Somerset, 19.25; Fort Warren, 19; Provincetown, 17.50; Fall River, 16; Worcester, 14.25; Princeton, 11.25; Charlestown, 9.75; Boston, 9.50; Westborough, 9.50; Milton, 9; Mendon, 7.

Michigan.—Mackinac City, 50; East Tawas, 47; Northport, 40.50; Traverse City, 39; Hastings, 33; Harrisonville, 28; Marquette, 23.50; Alpena, 22; Ionia, 20.50; Grand Haven, about 20; Reed City, 16.75; Kalamazoo, 16; Escanaba, 13; Litchfield, 13; Port Huron, 13; Detroit, 12; Hillsdale, 11.50; Lansing, 11.50; Marshall, 11; Thornville, 9; Cold Water, 5.50.

Minnesota.—Minneapolis, 22.25; Moorhead, 12; Northfield, 10.75; Saint Paul, 6.50.

Missouri.—Bedford, 11.25; Curryville, 8.25; Corning, 7.25; Pierce City, 7; Springfield, 5.25.

Montana.—Fort Assiniboine, 26.75; Fort Missoula, 13.50; Cartersville, 11.25; Fort Shaw, 9; Fort Benton, 7.50; Billings, 6.25; Helena, 5.75; Fort Shaw, 5.

Nebraska.—Nebraska City, 18.25; De Soto, 14.50; Genoa, 13; North Platte, 12; Utica, 11.25; Omaha, 10; Lincoln, 9; Fort Niobrara, 6.75.

Nevada.—Fort McDermitt, 52.50; Truckee, 10.50; Otego, 10; Palisade, 10; Carlin, 6; Reno, 5; Wells, 5.

New Hampshire.—Mount Washington, 41.50; Grafton, 24; Antrim, 13.50; New Market, 12.50.

New Jersey.—Cape May, 17.50; Bordentown, 14.50; South Orange, 13.50; Atlantic City, 13; Little Egg Harbor, 13; Barnegat, 7; Sandy Hook, 6.

New Mexico.—Silver City, 14; Santa Fé, 4.25.

New York.—Palermo, 33.75; North Volney, 30; Vineland, 20.75; Port Jervis, 19; White Plains, 18; Albany about 17; Johnstown, 16.75; Flushing, 16.50; Palermo, 15.50; Freehold, 13.75; Moorestown, 13.75; Ardenia, 13; Cooperstown, 12.25; Penn Yan, 11.25; Mountainsville, 10.75; Friendship, 9.25; Oswego, 9.25; Factoryville, 8.50; Ithaca, 8.50; New York City, 8.25; Buffalo, 6.50; Rochester, 5.25.